

CLAIMS

1. A gallium nitride semiconductor light emitting device, comprising a semiconductor substrate (1, 21), an active layer (6, 26, 46, 76) having a quantum well structure and made of nitride semiconductor containing at least indium and gallium, and a first cladding layer (5, 25) and a second cladding layer (9, 29) for sandwiching the active layer therebetween, wherein
- 10 the active layer (6, 26, 46, 76) comprises two quantum well layers (14, 34) and one barrier layer (15, 35, 55, 85) interposed between the quantum well layers.
- 15 2. The gallium nitride semiconductor light emitting device according to Claim 1, wherein the active layer (6, 26) is composed of only the two quantum well layers (14, 34) and the one barrier layer (15, 35) between the quantum well layers.
- 20 3. The gallium nitride semiconductor light emitting device according to Claim 2, wherein the barrier layer (15, 35) has a layer thickness of 10 nm or less.
- 25 4. The gallium nitride semiconductor light emitting device according to any one of Claims 1 to 3, wherein the barrier layer (15, 35) has a layer thickness of 4 nm or less.

5. The gallium nitride semiconductor light emitting device according to any one of Claims 1 to 4, wherein each of the quantum well layers (14, 34) has a thickness of 10 nm or
5 less.

6. The gallium nitride semiconductor light emitting device according to any one of Claims 1, 3, 4 and 5, wherein the active layer (46, 76) further comprises one or two additional
10 quantum well layers (54, 84) and as many barrier layers (55, 85) which are stacked alternately with the additional quantum well layer or layers (54, 84), wherein each of the barrier layers (55,
15 85) in the active layer (46, 76) has a layer thickness of 4 nm or less.

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7. The gallium nitride semiconductor light emitting device according to any one of Claims 1 to 6, wherein the gallium nitride semiconductor light emitting device is a semiconductor laser device and the active layer (6, 46) forms an oscillating
20 section of the semiconductor laser device.

8. The gallium nitride semiconductor light emitting device according to Claim 7, wherein the semiconductor laser device is a self-oscillating semiconductor laser device.

9. The gallium nitride semiconductor light emitting device according to any one of Claims 1 to 6, wherein the gallium nitride semiconductor light emitting device is a semiconductor light emitting diode device and the active layer (26, 76) forms a light emitting section of the semiconductor light emitting diode device.

10. A semiconductor laser light source device which comprises the semiconductor laser device as defined in Claim 7 and a driving circuit (17, 19) for injecting an electric current into the semiconductor laser device.

11. The semiconductor laser light source device according to Claim 10, wherein the electric current is a modulated current and a modulation frequency of the current is 15 300 MHz or more.

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